# Development of IoT-Based Sensor Tag for Smart Factory

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***Abstract*— To reduce the rate of defective products and ensure the health of employees, it has become increasingly necessary to improve air quality in factories. To do so, it is important to accurately determine the air quality in the factory first. However, currently available industry-grade sensors require complex and often separate construction processes, making them difficult to use in complicated industrial sites. In order to solve such an issue, this study developed an IoT-based sensor that can collect data such as factory temperature, humidity, CO2 levels, dust, and stench. This study has also developed software to manage the IoT-based sensors, which can transmit the data via RF communication. Sensor tags were tested for basic environmental durability, including waterproof, dustproof, and vibration standards. The sensors can be connected via USB to a computer to configure its settings and access the stored data within the sensors. Unlike other existing environmental sensors, these can be easily installed anywhere as they transmit data via wireless communication. These sensors can also be installed in the factory to check the factory's internal pollution level in real time. The application of this sensor will enable the real-time monitoring of air pollution in factories. By locating the polluted areas accurately, it will be possible to exercise distributed control over ventilation devices to prevent further spread of pollutants, while also pushing out the polluted air to maintain an optimal working environment. Future studies should develop a simulation model for determining the ideal installation location for the sensors. There also needs to be further studies in developing a distributed-controlled air-conditioning system to run empirical tests.**

***Index Terms*—IoT, Sensor Tag, Smart Factory, Air-Conditioning System, Distributed control**